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EXAMINER

BULLOCK JR, LEWIS ALEXANDER

ART UNIT PAPER NUMBER

2195

DATE MAILED: 08/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/071,159	<b>Applicant(s)</b> MARCOS ET AL.	
	<b>Examiner</b> Lewis A. Bullock, Jr.	<b>Art Unit</b> 2195	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 18 May 2006.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-31 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/19/05</u> | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over CORBA and ORB (The Server side of CORBA, OS/2 developer **ORFALI** et al. July/August 1995, **OMG**, "Understanding the ORB", Part 2, 1995, pp. 73-90, **IONA** Technologies, "The Orbix Architecture", January 1995, pp. 1-23, and **Mowbray** et al, "THE ESSENTIAL COBRA System Integration Using Distributed Objects", 1995, **RYMER, JOHN**, "Distributed Object Interoperability", and "OMG's UNO, Distributed Computing Monitor") in view of "Achieving Interoperability between CORBA and DCE Applications Using Bridges" by YANG et al.

2. For completeness, the above references are made part of the statement of the rejection because, these references all deal with **CORBA** and **ORB** and they discuss various aspect of the **CORBA**

### **As per independent claims 1 and 12 and dependent claims 4 and 14:**

A method of dynamically communicating an object message between a client and server of separate object models comprising the steps of (**ORFALI**, page 1, CORBA, and what CORBA does on the client side, and Dynamic Invocation Interface (DII) APIs and associated discussion):

mapping said client to said server [**ORFALI**, page 2, last line to page 3, first two line, Object adaptor assigns references to new object it creates, and associated discussion on mapping, also **Mowbray**, page 36, Fig. 3.2, and page 38, Fig. 3.2, and **OMG**, page 76, ORB accept responsibility, and associated discussion, further, **IONA**, page 10/23, 5<sup>th</sup> paragraph, Smart Proxies, "call-backs" from a server with which it had earlier corresponded, and associated discussion];

intercepting a message generated by said client in a first object model [**ORFALI**, page 2, "Dynamic Skeleton Interface, and Object adaptor", and their associated discussion, also **OMG**,, page 74, item 1, "The ORB receives a request targeting an object in the server, The ORB checks its repository and determine that neither the server nor the object is currently active", and **IONA**, 4<sup>th</sup> paragraph, "instead object requests are passed directly from the client code to the invoked object implementation", and associated discussion, further, Mowbray, page 36, fig. 3.1, "ORB functions as a communication infrastructure", and page 38, Fig. 3.2., also second paragraph, and associated discussion respectively];

examining a second object model for interface information for said Server [**ORFALI**, PAGE 2, 1<sup>st</sup> paragraph, "In both case (dynamic or static invocation), the ORB locates a server object adaptor, transmits the parameters, and transfers control to the object implementation through the server IDL stub", also, **OMG**, page 74, items "2.", and "3.", **IONA**, page 12/23, "then Orbix binds the client to an object within the server which provides an interface compatible with that expected the server", and finally **Mowbray**, page 38, second paragraph to page 39, "exception can be generated by the server or by the ORB in case of errors", and associated discussion];

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generating a translated message for said server [**ORFALI**, page 4, item 5, "the proxy object call cooperates with the local Objects Manager to find a server, marshals method argument, convert object pointers in the clients", and associated discussion; and **OMG**, page 78, 2<sup>nd</sup> paragraph, "object references are converted between stringfield and invocable forms only by the ORB", and associated discussion, also, **IONA**, page 7/23, 6<sup>th</sup> paragraph, "The IDL compiler is primarily a part of the development environment, and used to translate IDL description into sub code to aid remote operations", further, **Mowbray**, page 38, 2<sup>nd</sup> paragraph, Transparently, the stub provides an interface to the ORB that performs marshaling to encode and decode the operation's parameters into communication formats suitable for transmission", and associated discussion].

forwarding said translated message to said server [the forwarding of the translated message to the server is an inherent part of the process after the translation for the server in any of the references, See **ORFALI**, "send the method to the server", **OMG**, page 77, 2<sup>nd</sup> par. "object adaptor provides interface between ORB and object", **IONA**, page 7/23, e.g. "to aid remote operation", and page 38, "the OMG IDL skeleton program is the corresponding server-aid implementation of the OMG IDL interface"]].

As to statement in the preamble that "message between a client and server of separate object model", applicant's attention is directed to the teaching of **Mowbray** on page 37, where he explicitly says: "**CORBA is a peer-to-peer distributed computing facility where all applications are objects (in the sense of object orientation). Objects can alternate between client roles and server roles. An object is in a client role when it is the originator of an object invocation. An object is in a server role when it is the recipient of an object invocation, most objects probably will play both roles**", and associated discussion, as also Fig. 3.2. where client

object and server object are separate]. However, the cited references do not teach the mapping is created dynamically at run time.

YANG teaches dynamically creating a mapping of a client to a server at run time in response to a request from the client for a connection to the server (via a client invoking a bridge factory to thereby create a bridge dynamically or on-demand wherein the bridge comprises a proxy object (CORBA server) and a stub object (DCE CLIENT) and a mapping between the components (type mapping) (see 146, On-demand bridge – pg. 147, Dynamic Bridge; pg. 149; and page 150, in particular figure 6). It would be obvious to one of ordinary skill in the art that the different ORBs of Orfali, OMG, IONA, or Mowbray are the different environments of YANG. Therefore, it would be obvious to one of ordinary skill in the art to combine the prior art teachings of either Orfali, OMG, IONA, or Mowbray with the teachings of YANG in order to bind and interact objects in different environments (Introduction).

### **As to independent claim 22:**

A dynamic object message broker comprising [the teaching of **ORFALI** et al., **OMG**, **IONA**, and **Mowbray** et al., on CORBA]:

a first computer system having a first object model and a first object running in said first object model [**ORFALI** et al., page 1, client object, **OMG**, page 74-75, client object **IONA**, page 8/23, client object, and **Mowbray** et al., page 38, Fig. 3.2. client object];

an mediating component coupled to said first computer system, said mediating component capable of creating a dynamic messaging interface [**ORFALI**, page 2, “the object adaptor sits on top of ORB’s core communication services and accept requests for service on behalf of the servers object”, and page 1, last par., “to



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support both static and dynamic client/server invocations", **OMG**, page 77, 2<sup>nd</sup> par. **IONA**, page 11/23, Orbix Architecture (see specifically 2<sup>nd</sup> par.), and **Mowbray** et al., page 36, and page 38, ORB] ; and

a second computer system coupled to said mediating component, said second computer system having a second object model and a second object running in said second object model [**ORFALI** et al., page 1, server object, **OMG**, page 74-75, server object **IONA**, page 8/23, server object, and **Mowbray** et al., page 38, Fig. 3.2. server object].

Regarding first computer, second computer, and mediating component and See, **RYMER**, "Distributed Object Interoperability" page 7, under the Title, "TWO KINDS OF INTERFACE", also, "OMG's UNO", page 3, under the Title "INTER-ORB BRIDGE SUPPORT AND DYNAMIC SKELETON INTERFACE".

As to the limitation of "first object running in said first object model", and "second object running in said second object model", see the discussion of separate object models in the rejection of claim 1, and 12. Additionally, see the discussion of **Mowbray** on page 44, regarding "product availability" and cross-platform platform development product called "Common Object Model". See also **OMG**, page 78, where he teaches of "ORBs will typically lack static skeletons for remote invocations, since the installations procedure for an object implementation grafts its skeleton only onto its own ORB and not on that of the client", indicating explicitly that the objects in **OMG** have their own communication system , also page 87, last par., (See also page 4 of the present application, for the definition of Object Model on page 3 last par. continued on page 4). However, the cited references do not teach the mediating component providing a dynamic mapping at run time.

YANG teaches a mediating component (bridge factory) dynamically creating a mapping of a client to a server at run time in response to a request from the client for a connection to the

server (via a client invoking a bridge factory to thereby create a bridge dynamically or on-demand wherein the bridge comprises a proxy object (CORBA server) and a stub object (DCE CLIENT) and a mapping between the components (type mapping) (see 146, On-demand bridge – pg. 147, Dynamic Bridge; pg. 149; and page 150, in particular figure 6). It would be obvious to one of ordinary skill in the art that the different ORBs of Orfali, OMG, IONA, or Mowbray are the different environments of YANG. Therefore, it would be obvious to one of ordinary skill in the art to combine the prior art teachings of either Orfali, OMG, IONA, or Mowbray with the teachings of YANG in order to bind and interact objects in different environments (Introduction).

**As to independent claim 27:**

The claim is rejected for the reasons stated in the rejection of claims 1, and 12.

**As to independent claim 31:**

The claim is rejected for the reasons stated in the rejection of claims 1, and 12, and in addition

examining a plurality of second object models to locate a server to process said message [**ORFALI**, PAGE 2, 1<sup>st</sup> paragraph, "In both case (dynamic or static invocation), the ORB locates a server object adaptor, transmits the parameters, and transfers control to the object implementation through the server IDL stub", also, **OMG**, page 74, items "2.", and "3.", **IONA**, page 12/23, "then Orbix binds the client to an object within the server which provides an interface compatible with that expected the server", and finally **Mowbray**, page 38, second paragraph to page 39, "exception can be generated by the server or by the ORB in case of errors", and associated discussion, also **IONA**, page 8/23],



obtaining interface information for said server running in one of said plurality of second object models [**ORFALI** et al., page 1, last par. "the ORB interface consists of a few APIs", **OMG**, page 78, "the dynamic skeleton interface" associated discussion, **IONA**, page 9/23, last par. IDL interface, and **Mowbray** et al., page 37, Fig. 3.1. interface definition language and Fig. 3.2., and associated discussion];

**As to dependent claim 2:**

The method of claim 1 further comprising the step of transmitting a response from said server to said client [**ORFALI** et al., page 2, "The object adaptor", and associated discussion, **OMG**, page 74, "item No. 5, **IONA**, page 9/23, 4<sup>th</sup> par., and **Mowbray** et al., page 38, Fig. 3.2.].

**As to dependent claims 3 and 13:**

The method of claim 1 further comprising the steps of; said client sending a query to determine if said server is able to respond to said message [**ORFALI**, page 2, "Dynamic Skeleton Interface, and Object adaptor", and their associated discussion, also **OMG**, page 74, item 1, "The ORB receives a request targeting an object in the server, The ORB checks its repository and determine that neither the server nor the object is currently active", and **IONA**, 4<sup>th</sup> paragraph, "instead object requests are passed directly from the client code to the invoked object implementation", and associated discussion, further, **Mowbray**, page 36, fig. 3.1, "ORB functions as a communication infrastructure", and page 38, Fig. 3.2., also second paragraph, and associated discussion respectively]; and responding affirmatively to said query regardless of whether said server is able to respond to said message[See **ORFALI**, "send the method to the server", **OMG**, page 77, 2<sup>nd</sup> par. "object adaptor provides interface between ORB and object", **IONA**, page 7/23, e.g. "to aid remote operation", and page 38, "the OMG IDL

skeleton program is the corresponding server-aid implementation of the OMG IDL interface”].

**As to dependent claim 5, and 15:**

The method of claim 4 further comprising the step of creating an association between said client and said proxy object [**ORFALI**, page 4, item 5, “in the client by the local proxy objects”, also first partial par., classes that provide the proxy client, server, and socket functions, **OMG**, page 74-75, **IONA**, page 9/23, 2<sup>nd</sup> to last par., “runtime builds a “proxy”, and **Mowbray** et al., page 38].

**As to dependent claims 6-8, and 16-18:**

Please see the rejection of claim 27.

**As to dependent claims 9, 19 and 29:**

The method of claim 1 wherein said message includes an operation and a plurality of arguments, said step of generating further comprises the steps of:  
translating said operation for said server;  
translating said plurality of arguments for said server; and  
generating a translated message using a message protocol of said Server [**ORFALI**, page 4, item 5, “the proxy object call cooperates with the local Objects Manager to find a server, marshals method argument, convert object pointers in the clients”, and associated discussion; and **OMG**, page 78, 2<sup>nd</sup> paragraph, “object references are converted between stringfield and invocable forms only by the ORB”, and associated discussion, also, **IONA**, page 7/23, 6<sup>th</sup> paragraph, “The IDL compiler is primarily a part of the development environment, and used to translate IDL description into sub code to aid remote operations”, further, **Mowbray**, page 38, 2<sup>nd</sup> paragraph, “Transparently, the stub provides an interface to the ORB that performs marshaling to encode and decode the operation’s parameters into communication formats suitable for transmission”, and associated discussion].

**As to dependent claims 10-11, 20-21, and 30:**

The method of claims 9 and 2, wherein said step of translating said arguments further comprises the steps of:

determining the expected number and type of arguments of said Server;

determining whether an expected argument type is different than an argument type; and

translating one of said plurality of arguments to an expected argument type when its type is different than said expected argument type [**ORFALI**, page 4, inherently teach of this step by **Marshaling**, see also **OMG**, the discussion of object reference and types on page 80, 2<sup>nd</sup> par.];

generating a translated response using a message protocol of said client [[**ORFALI**, page 4, item 5, "the proxy object call cooperates with the local Objects Manager to find a server, marshals method argument, convert object pointers in the clients", and associated discussion; and **OMG**, page 78, 2<sup>nd</sup> paragraph, "object references are converted between stringfield and invocable forms only by the ORB", and associated discussion, also, **IONA**, page 7/23, 6<sup>th</sup> paragraph, "The IDL compiler is primarily a part of the development environment, and used to translate IDL description into sub code to aid remote operations", further, **Mowbray**, page 38, 2<sup>nd</sup> paragraph, "Transparently, the stub provides an interface to the ORB that performs marshaling to encode and decode the operation's parameters into communication formats suitable for transmission", and associated discussion]; and

transmitting, using said mapping, said translated response to said client [the transmitting of the translated message to the client, See **ORFALI**, "send the method to the server", **OMG**, page 77, 2<sup>nd</sup> par. "object adaptor provides interface between ORB and object", **IONA**, page 7/23, e.g. "to aid remote operation", and

page 38, "the OMG IDL skeleton program is the corresponding server-aid implementation of the OMG IDL interface"].

**As to dependent claims 23, and 28:**

The message broker of claim 22 wherein said mediating component comprises:

a control module, said control module capable of creating a mapping between said client object and said server object [**ORFALI**, page 2, "the object adaptor sits on top of ORB's core communication services and accept requests for service on behalf of the servers object", and page 1, last par., "to support both static and dynamic client/server invocations", **OMG**, page 77, 2<sup>nd</sup> par. **IONA**, page 11/23, Orbix Architecture (see specifically 2<sup>nd</sup> par.), and **Mowbray** et al., page 36, and page 38, ORB];

a proxy object coupled to said a control module [**ORFALI**, page 4, item 5, "the proxy object call cooperates with the local Objects Manager to find a server, marshals method argument, convert object pointers in the clients", and associated discussion; and **OMG**, page 78, 2<sup>nd</sup> paragraph, "object references are converted between stringfield and invocable forms only by the ORB", and associated discussion, also, **IONA**, page 7/23, 6<sup>th</sup> paragraph, "The IDL compiler is primarily a part of the development environment, and used to translate IDL description into sub code to aid remote operations", further, **Mowbray**, page 38, 2<sup>nd</sup> paragraph, "Transparently, the stub provides an interface to the ORB that performs marshaling to encode and decode the operation's parameters into communication formats suitable for transmission", and associated discussion]; and

a stub object coupled to said proxy object [**ORFALI**, page 1, "and both client and server stub are generated by the IDL compiler", **OMG**, page 87, **IONA**, page 9/23, 2<sup>nd</sup> to last par., "runtime builds a "proxy", and **Mowbray** et al., page 38].

**As to dependent claim 24:**

The message broker of claim 23 wherein said first object is a client object, and said proxy object is coupled to said client object [**ORFALI**, page 4, item 5, "the proxy object call cooperates with the local Objects Manager to find a server, marshals method argument, convert object pointers in the clients", and associated discussion; and **OMG**, page 78, 2<sup>nd</sup> paragraph, "object references are converted between stringfield and invocable forms only by the ORB", and associated discussion, also, **IONA**, page 7/23, 6<sup>th</sup> paragraph, "The IDL compiler is primarily a part of the development environment, and used to translate IDL description into sub code to aid remote operations", further, **Mowbray**, page 38, 2<sup>nd</sup> paragraph, "Transparently, the stub provides an interface to the ORB that performs marshaling to encode and decode the operation's parameters into communication formats suitable for transmission", and associated discussion].

**As to dependent claim 25:**

The message broker of claim 24 wherein said second object is a server object, and said stub object is coupled to said server object [**ORFALI**, page 1, "and both client and server stub are generated by the IDL compiler", **OMG**, page 87, **IONA**, page 9/23, 2<sup>nd</sup> to last par., "runtime builds a "proxy", and **Mowbray** et al., page 38].

**As to dependent claim 26:**

The message broker of claim 22 further comprising a second mediating component coupled to said mediating component [**Mowbray**, teaches of Skeleton, see also **OMG**, page 77, "there will be a skeleton for each object type bound to the ORB].

**RELEVANT CITED ART**

*Applicant is also referred to the other cited publications available in the*

*Notice of References cited wherein the concept of dynamically creating a bridge*

***mapping from a client to a server for type communication between object models is well known in the art.***

### ***Response to Arguments***

3. Applicant's arguments with respect to claims 1-31 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

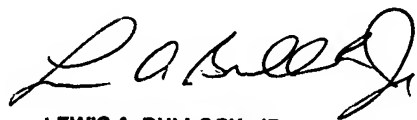
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lewis A. Bullock, Jr. whose telephone number is (571)

272-3759. The examiner can normally be reached on Monday-Friday, 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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August 18, 2006



LEWIS A. BULLOCK, JR.  
PRIMARY EXAMINER